

The wait times for avocado trees could soon get a lot shorter thanks to a world-first Australian innovation that can use a single millimeter of tree cutting from one tree to make 500 new ones.

The world's first Hass avocados produced by trees grafted on tissue culture plants are tasty, healthy, and disease-free, say University of Queensland scientists, who pioneered the breakthrough technology.

"Trials show that the clonal tissue culture rootstocks are yielding high-quality fruits in the field," said project leader Professor Neena Mitter, Director of UQ's Centre for Horticultural Science.

Economic modelling conducted by the University of Southern Queensland with the Department of Agriculture and Fisheries as part of the project suggests that the tissue culture technology offers a potential 21 percent return on investment to avocado growers.

"This is a Queensland-owned and invented technology platform validated from lab to orchard, and is now progressing to commercial roll out," Minister for Agricultural Industry Development and Fisheries and Minister for Rural Communities Mark Furner said.

"Queensland produces the majority of Australia's avocados and this innovation offers opportunities for growers across the state."

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Minister Mark Furner and Prof Neena Mitter in UQ avocado tissue culture lab © QAAFI

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The tissue culture technology allows for up to 500 times more plants to be grown from a single cutting in 10-12 months – significantly reducing both resources required and the time it currently takes to produce a plant for sale in an orchard.

“We have been successful in rooting multiple industry-relevant avocado rootstocks using our meristem or plant stem cells-based approach to multiply plants,” Professor Mitter said.

In trials funded by the Queensland Government’s Advance Queensland Innovation Partnerships, tissue culture plants produced in a laboratory and then grafted with Australia’s main avocado variety, Hass, have been successfully established in fields in Bundaberg, Tully and Lakeland and two locations in Western Australia – Pemberton and Busselton.

Childers avocado grower Lachlan Donovan has been growing laboratory-propagated

avocado trees for the past three years and said that he was pleased with the tree growth and harvest.

“In the past the delay between ordering new trees and planting has been two to three years,” Donovan said.

“The biggest advantage of this new technology for us is to be able to get desired rootstocks and varieties into production quickly.”

A survey of Australian avocado industry members undertaken by Central Queensland University indicated that 72 per cent cannot access enough plants and nearly half indicated they already have the skills and knowledge to work with tissue culture trees.

The global avocado market was valued at USD 9.14 billion in 2020, with consumers embracing the health benefits of the fruit, which contains fibre, healthy fats and important nutrients.

“This is a sustainable technology that reduces the need for water, fertilisers, pest management processes and farming land used to produce rootstocks,” Professor Mitter said.

“With traditional avocado propagation, trees must be grown in fields for seed production.

“Another advantage with tissue culture propagation, particularly in this day and age, is that the movement of soil and the biosecurity risks this entails can be eliminated.”